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Editorial

Orchids are perhaps not the first thing that comes to mind when we think about climate change. Record temperatures, catastrophic droughts, melting glaciers, out-of-control bush fires, burning rainforests and other calamities are of more immediate concern. But when we focus on orchid conservation, it is obvious that climate change looms large. It seems likely that orchids are more vulnerable to climate change than most other plant groups, for the following reasons: (1). Since about 70% of all orchids are epiphytes, they are probably more likely to be affected by drought. Even if mature plants would be able to survive unusually severe droughts, one can imagine that seedlings would be much more vulnerable. If such droughts become too frequent, seedling recruitment will be compromised, and the orchids will die out. (2). Since all orchids go through a mycoheterotrophic stage, at least as as seedlings, they depend on the presence of the right fungi for their long-term survival. It could be that climate change affects these fungi in such a way that they are no longer available to particular orchid species. These will then gradually disappear from their habitats. (3). Similarly, since many orchids depend on highly specific pollinators, the effect of climate change on the availability of these pollinators may be significant. A chain is only as strong as its weakest link, and we do not know if it is the orchid, the fungus or the pollinator that is the weakest link. (4). Orchids tend to occur in sparse, widely dispersed populations. This implies that they need large areas to maintain sufficiently high numbers of individuals.

At the same time, it is undeniable that orchids must have survived even more dramatic episodes of climate change in the past than we are witnessing today. Most orchid species that still exist are probably old enough to have survived the most recent Pleistocene Ice Ages. Along with lower global temperatures, the Ice Ages saw massive vegetation changes. In what are now everwet tropical regions with rainforest as natural vegetation cover, there were much drier savannas during the glacial maxima, with small patches of rainforest in isolated areas. There can be no doubt that there have been enormous shifts in local orchid species composition and in species distributions during and after the Pleistocene. Nevertheless, 27,000 orchid species, or whatever the right number is, still inhabit our little blue planet.

Is this reason for optimism? After all, it does show some form of resilience. Unfortunately, I don't think looking at the past can give us much comfort. The world was a rather different place, 20,000 years ago. Humans, while probably already a factor in the extinction of large mammals, had not reached such population levels that they could have made much difference to the world's vegetation. In other words, species driven from their original habitats by climate change would have been able to colonize adjacent areas with almost untouched vegetation. Nowadays, this would be much harder, as anthropogenic vegetation dominates so much of the globe. Many orchid species today would have nowhere to go. In addition, who knows how many species became extinct during the Ice Ages? And finally, the tempo of climate change today seems much higher than it was during past glacial and interglacial epochs. It is possible that the changes are now too rapid for many species to adapt, even under optimal conditions. On the positive side, certain species will be able to expand their range as a result of climate change, for example, Mediterranean orchids occurring farther North in Europe than before.

It should be clear, then, that conservation must take climate change into account. How exactly this should be done is one of the main challenges lying ahead. Below are some recent references on orchids and climate change. We will need more of this kind of research.

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Upcoming Conferences

We welcome any news about future orchid conferences for promotion here. Please send details to the editor as far in advance of the event as possible, remembering that the *Orchid Research Newsletter* is published only in January and July of each year.

The **23rd World Orchid Conference** will be held at Taichung, Taiwan, from 9 to 12 March 2020. More information can be found on the associated website: https://www.woc23.com.

Jobs

We will be happy to announce job opportunities, provided they explicitly involve orchid research or conservation. Please send details to the editor.

Funding Opportunities

We will be happy to announce funding opportunities, provided they explicitly involve orchid research or conservation. Please send details to the editor.

The **American Orchid Society** is soliciting grant proposals for orchid research. Deadline is 1 March of each year. For application instructions see http://www.aos.org/about-us/orchid-research/application-guidelines.aspx

News from Correspondents

Please submit any news about recently completed research, future research plans and needs, change of address, upcoming or recent fieldwork, etc. to the editor. Graduate students are especially encouraged to share the subjects of their thesis or dissertation with the international community.

Obituaries

Robert (Bob) Louis Dressler (1927–2019)

Bob Dressler, probably the most influential orchid taxonomist of the past 50 years, passed away on 15th October after a short illness. Bob graduated from the University of Southern California and completed his doctorate at Harvard University. His early collaboration with Calaway (Cal) Dodson was a ground-breaking study of the pollination of *Stanhopea* and related orchids by Euglossine bees, which turned him into an expert entomologist as well as a botanist.

Following graduation, Bob was employed by the Smithsonian Institute and spent many years on Barra Colorado island in the Panama Canal, which is a biological and ecological research station for the Smithsonian Institute. There, he continued his studies on orchids and began collaborations with other botanists and students, many now influential specialists themselves. He first met his wife Kerry, a talented photographer, in Panama.

On retirement from the Smithsonian, Bob and Kerry moved to Cartagena in Costa Rica where he was appointed Professor at the Lankester Botanic Garden of the University of Costa Rica. His expertise on tropical American orchids had earlier brought him to the attention of Peter Raven, Director of the Missouri Botanical Garden, of which he was soon made an Honorary Research Associate.

In Costa Rica, Bob teamed up with a group of young botanists all of whom benefitted from his immense knowledge of the tropics and its orchid flora. These included Franco Pupulin, Mario Blanco, Diego Bogarin, and Adam Karremans, all now professors at the university. They made many field trips in the country, which has, as a result, one of the best-known tropical orchid floras in the Americas.

Bob's most influential contributions to orchid science have undoubtedly been *The Orchids: Natural History and Classification* (Harvard University press and Cambridge University Press, 1981) and *The Classification and Phylogeny of the Orchid Family* (Cambridge University and Dioscorides Press, 1993). They introduced the complex issue of orchid classification to both professional and amateur orchidists and to orchid growers. They also inspired younger botanists, such as Norris Williams, Mark Chase, Mark Whitten, Alec Pridgeon, Antonio Toscano de Brito, the Costa Rica orchid group and many others, to tackle the many systematic problems highlighted by Bob in his books, which were written largely in the pre-DNA era. Fortunately, the advent of better computers and DNA analysis have allowed them to tackle problems that seemed insurmountable from a classical perspective.

Bob's publication list is extensive, and he was the author of the standard *Field Guide to the Orchids of Costa Rica and Panama* (Cornell University Press. 1993).

Bob and Kerry were a great team, welcoming all and sundry in Panama, Gainesville and latterly Cartagena. He will be sorely missed by his many friends and colleagues and most of all by Kerry and their family to whom we send our sincere condolences.

Phillip Cribb

Bob Dressler in Florida, 2001 (photo Phillip Cribb)

Bob and Kerry Dressler with Dario Castelfranco (centre)
in Costa Rica, 2001 (photo Phillip Cribb)

Carlyle Augustus Luer (1922–2019)

Carl Luer developed an interest in orchids relatively late in life. Born in Alton, Illinois in 1922, he received his MD from Washington University in 1946 and became a surgeon. His entry into the world of orchid research began with publications on the native orchids of Florida in the early 1960s and expanded from there. That work provided the impetus for his two-volume set on the orchids of North America, *The Native Orchids of Florida* (The New York Botanical Garden, 1972) and *The Native Orchids of the United States and Canada, excluding Florida* (The New York Botanical Garden, 1975). The combination of meticulous attention to detail in descriptions, illustrations, and research evident in this work would mark Carl's contributions to our knowledge of orchids, which continued until shortly before his death on 9 November, 2019.

After nearly thirty years as a surgeon, Carl traded his scalpel for a pencil and a notebook and devoted his life to orchids, reveling in the fact that they did not call with emergencies in the middle of the night. When orchid researcher Calaway Dodson suggested that he investigate the then-neglected subtribe Pleurothallidinae, it was the beginning of a decades-long, unprecedented taxonomic assault on the subtribe. Over the past four decades, Carl, often along with co-authors, authored literally thousands of taxa and resolved many cryptic older names.

He was one of the founders of the Marie Selby Botanical Gardens in Sarasota, Florida, where he lived with Jane, his beloved wife and partner in all endeavors. When the Marie Selby Botanical Gardens was young, he served in a number of roles on the Board of Trustees, including Chairman, and contributed to establishing the Gardens' scientific credentials by helping to create the scientific journal *Selbyana*, serving as its first editor, and helping to establish the herbarium and library. At the time of his death, he was Trustee Emeritus of the Gardens.

Carl and Jane Luer traveled the world together, working with local collectors and taxonomists and visiting scientific institutions and herbaria. He was Senior Curator Emeritus at the Missouri Botanical Garden in St. Louis and a research associate at herbaria worldwide, but his favorite title was one he assigned to himself: "illustrator of the Pleurothallidinae." Carl authored countless monographs and papers, and contributed to many regional treatments authored by others. His most notable publication is the 32-part monograph series *Icones Pleurothallidinarum*, an indispensable reference published by the Missouri Botanical Garden Press (1986–2012). His most beautiful and extraordinary publications, recalling elaborately illustrated 19th century botanical works, are certainly the folio series: *Thesaurus Masdevalliarum* (1984–1995), *A Treasure of Masdevallia* (1996–2004), and *Thesaurus Dracularum* (1988–1993). Recently, he focused his efforts on the genus *Stelis* s.s. in Colombia.

Many of us knew him as a colleague who was generous with his time, knowledge, and astonishingly large collection of preserved material, but there was another Carl Luer: the one who was devoted to his family; who loved all animals; and who, along with Jane, was a gracious and welcoming host to enthusiasts and his fellow investigators. His legacy to the orchid world is the enormous body of work he created, which will serve as the foundation for research in the Pleurothallidinae for decades to come.

Lisa Thoerle

Carl and Jane Luer (photo Lisa Thoerle)

Recent Orchid Nomenclature

New orchid names may be retrieved from the revamped IPNI website: https://beta.ipni.org/. Click on "Advanced search"; after the search page appears, type in **Orchidaceae** under family name and select a date in "Recorded after". This will pull up a list of all orchid names added to the IPNI database since that date. Also be sure to check the World Checklist of Selected Plant Families (http://apps.kew.org/wcsp/) for accepted names and synonyms as well as for building your own checklists. Alternatively, the Plants of the World Online website (http://www.plantsoftheworldonline.org/) provides similar information with added maps and illustrations.

Recent Literature

We are grateful to Paolo Grünanger, who, after a break for health reasons, once more supplied references from journals dedicated to European orchids. If you are aware of any relevant citations published between January and November 2019 not listed here or in the previous issue, please send them to the editor for publication in the next issue (July 2020). Write "ORN references" in the subject line of the email. Book citations should include author(s), year of publication, title, publisher, and place of publication (in that order). Journal titles should be spelled out in full.

Anatomy and morphology

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